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Case study 7.1
Sipadan: A Jewel in the Scuba Diving Crown

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Sipadan is a tiny Malaysian island (16.4 hectares) in the north-east of Borneo. Geologically, it was formed by a volcanic thrust which surfaces 600 m from the floor of the Celebes Sea. Its unique underwater scenery displays glorious landscapes of walls adorned with hundreds of species of soft and hard corals. Located at the heart of the Indo-Pacific basin, the island's waters have more than 3000 fish species, a diversity which is similar to Australia's Great Barrier Reef (Jackson, 1997). Sipadan has more marine life than any other spot on this planet (Sipadan, 2010). It is also perhaps the only location where sharks and turtles are seen regularly (Wood, 1981). Another unique feature of Sipadan is the 'Turtle Tomb', an underwater limestone cave with tunnels and chambers, some of which contain many skeletal remains of turtles. Sipadan consistently appears in lists of the world's top 10 dive sites in scuba magazines.

The island was 'discovered' by Ron Holland, one of the founders of Borneo Divers in 1983. Sipadan was brought to international attention following a documentary with worldwide circulation produced by Jacques Yves Cousteau in 1988: 'Ghost of Sea Turtles' and he described the island as an untouched piece of art. Musa (2002) criticised this, arguing that the event was the beginning of what might have led to the island's over-exploitation in the 1990s. Responding to the unceasing demand to experience Sipadan, extensive development was carried out on the island and threatened its delicate resources. Many had commented that Sipadan was simply being loved to death (e.g. Musa, 2002; Wood et al., 1995) and became a victim of the 'tragedy of the commons'.

Despite concerns about the impacts of over-development on the island (Mortimer, 1991; Universiti Kebangsaan Malaysia [UKM], 1990; Wood, 1981; Wood et al., 1993, 1995), by the end of the 1990s there were six resorts perched on the northern rim of the island. These were Borneo Divers (1988), Pulau Sipadan Resort (1991), Abdullah Sipadan Resort (1991), Sipadan Dive Centre (1992), Borneo Sea Adventure (1995) and Pulau Bajau (1997). Musa (2002) estimated that all these resorts would have accommodated a total of 360 divers. Adding divers from elsewhere (nearby islands and the mainland), Sipadan could have hosted up to 500 divers a day during the peak season. Intensive land development on the island expanded alarmingly throughout the 1990s and the 2000s: 8% (UKM, 1990), 13.5% (Wood et al., 1993), 33.4% (Wood et al., 1995) and 50% (Musa, 2002) of the land area of the
island. The physical, environmental and social impacts of tourism development on the island were considerable.

The clearing of vegetation and undergrowth had increased evapotranspiration and destabilization of sediments. This led to erosion. Beachfront vegetation clearance, excessive lighting, and noise had reduced the frequency of turtle nesting by 31.7% from 1992 (1470 turtles) to 1997 (1001 turtles) (Musa, 2002). Mortimer (1991) commented that the practice of relocating turtle nests from their natural site to the sun-exposed beach area could affect the gender balance of turtles. The underground water had been utilized faster than rain replenishment, causing the encroachment of salt water inland and the destruction of up to 20% of Sipadan’s original vegetation (UKM, 1990).

The septic tank used was ineffective, and the flushing of toilets with seawater reduced the biodegradability of the sewage. Partially treated sewage leaked to the sea, causing eutrophication, which resulted in plankton blooms with subsequent reduction of the underwater visibility (something that divers particularly value). The previous 40-60 m underwater visibility recorded by Cousteau in 1988 had now decreased to 20-30 m. Wood et al. (1995) commented that even though coral damage was still minimal, the reefs were not exactly pristine. Boats anchored around the island had also resulted in oil spills, posing a threat to the marine environment. Wood et al. (1995) was critically concerned at how the island’s development had been dictated by political and economic precedence. In a study of scuba divers’ satisfaction, Musa (2002) noted that divers were gravely concerned about over-development, crowding (on the island and underwater), litter and noise, as there was nowhere on the island that the noise of resort generators could not be heard.

All the resorts formed Resorts Consortium in 1998 to centralize scuba diving operations in Sipadan. The effort was self-imposed and self-regulated. Collectively, they bought turtle nests from traditional turtle egg collectors and transferred them to a hatchery. The newborns were released to the sea. The Consortium also pooled resort services which pollute, overlap and are costly if handled separately. The best example of this was the centralization of transportation. However, efforts to centralize other important elements such as water, waste, compressors and power generators did not materialize.

Both Wood (1981) and Musa (2002) proposed that the island should be left alone without any serious human interference. Musa (2002) suggested that all resorts on the island should be relocated to nearby islands or the mainland. Efforts then should urgently be carried out to determine the island’s carrying capacity or limit of acceptable change.
together with the necessary rehabilitation in order to re-establish its ecological balance. He added that because of the island’s small size, zoning for recreational users may not be practical. The sole recreational activity permitted should be scuba diving and only experienced divers should dive in Sipadan. Musa (2002) also proposed that the island should be designated as a World Heritage Site because of its unique geological features and marine life.

Musa (2002) commented that the irresponsible development on the island in the 1990s could be attributed to uncertain governance due to the disputed status of the island, which was claimed by both Malaysia and Indonesia. The area was attractive to both countries due to the multi-million-dollar scuba diving tourism industry and the possible lucrative deep oil reserve. While the dispute was referred to the International Court of Justice, the governments may have been reluctant to take action by way of control which might be construed as pre-empting the court’s decision. However, in 2002, the Court declared that Sipadan belonged to Malaysia, based on effective occupation and the absence of other superior title.

With growing international criticism, the central government of Malaysia firmly ordered all six resorts on the island to be closed and moved to nearby islands or the mainland by 31st of December 2004. The majority relocated to Mabul Island. The decision was regarded as a victory and culminating success for conservation. Only day trips were allowed to Sipadan, and the daily carrying capacity was set at 80 divers. After decades of over-exploitation, Sipadan was declared a Protected Marine Park Reserve on 1st January 2005, under the management of Sabah Park. With pressure from dive resorts on the island of Mabul, the Resorts and National Security committees subsequently increased the Sipadan quota to 120 divers a day.

Not everyone agreed that the presence of operators on the island had contributed to the damage of the island’s ecosystem. Alin et al. (2006) for example argued that the presence of the operators on the island not only had deterred illegal and destructive fish bombing but also slowed down the extinction process of endangered turtle species. The increased naval presence in the area as a direct result of a dispute with Indonesia resulted in higher levels of security on the island and protection of its marine life.

Even though Sipadan is yet to be designated as a World Heritage Site, the island can no longer be regarded as belonging to Malaysia alone. Sipadan is overseen by a vigilant international diving community. Evidence of this arose on 15 May 2006 when a barge carrying thousands of tonnes of building material beached on the island, destroying a significant portion of reef (372 m²). Within hours there
was a global outcry from the diving community demanding an explanation and criticizing the Malaysian government for mishandling their precious island.

In terms of management, the Marine Research Foundation works together with Sabah Parks, which have a mandate from the Sabah State Government to develop management plans for the island under International Union for Conservation of Natural Resources (IUCN) Category IV Protected Area Status. The organization provides technical expertise to restore the damage of the reef ecosystem. The immediate target is the island designated as a World Heritage Site under the Convention Concerning the Protection of the World Cultural and Natural Heritage. This would ensure that the island’s management would be monitored in the international interest by the IUCN under UNESCO’s World Heritage Trust.

Education is being targeted at divers, dive operators, and residents of Sipadan’s nearby islands and the mainland. These stakeholders need to be acknowledged for behaviour that impacts the marine environment. In Mabul—the main island of the relocated resorts and new resort developments catering to divers to Sipadan—operators regularly hold marine educational workshops and programmes as well as beach clean-ups. Since the island of Mabul is also inhabited by thousands of local people, the majority of whom rely on traditional fishing for their livelihoods, other than establishing, carrying capacity, monitoring and enforcement, a sustainable management model should consider greater community involvement (extending to compensation schemes if necessary). Anecdotal evidence suggests that turtle nesting is currently increasing and Sipadan vegetation is recovering. Marine life appears to be resilient, and the island appears to be returning to its former glory.

Further reading
